WHAT IS CLAIMED IS:

1. An implantable medical device with a calcium phosphate coating comprising:

(a) substrate; and

(b) calcium phosphate coating on the substrate, said coating having desired bonding and porosity characteristics.

2. A device as claimed in claim 1 wherein the calcium phosphate coating is hydroxyapatite.

3. A device as claimed in claim 1 wherein the thickness of the calcium phosphate coating is between about 0.00001 mm and 0.01 mm.

4. A device as claimed in claim 1 wherein the thickness of the calcium phosphate coating is between about 0.001 mm and about 0.0001 mm.

5. A device as claimed in claim 1 wherein the tensile bond strength between the substrate and the calcium phosphate coating is greater than about 20 MPa.

6. A device as claimed in claim 1 wherein the calcium phosphate coating is deposited on the device as particles having a diameter between about 1μm and 100μm and a thickness of between about 1 μm to 10 μm..

7. A device as claimed in claim 1 wherein the particles cover about 20% to about 99% of the surface of the substrate.

8. A device as claimed in claim 1 wherein the substrate is constructed of stainless steel, cobalt alloy, titanium cobalt-chromium or metallic alloy.

9. A device as claimed in claim 1 wherein the calcium phosphate coating is porous and the pores retain and elude a drug.

10. A device as claimed in claim 9 wherein the rate of release of the drug from the pores is controlled in an engineered manner.

11. A device as claimed in claim 10 wherein the substrate has a first calcium phosphate coating and a second calcium phosphate coating and the drug is contained in the first and second coatings.

12. A device as claimed in claim 9 wherein the drug inhibits restenosis.

13. A device as claimed in claim 1 wherein the calcium phosphate coating is dicalcium phosphate, tricalcium phosphate or tetracalcium phosphate.

14. A device as claimed in claim 1 wherein the device is a human or animal tissue implantable device.

15. A device as claimed in claim 14 wherein the device is a stent.

16. A process of coating an implantable medical device with a calcium phosphate coating comprising:

(a) hydrolyzing a phosphor precursor in a water or alcohol based medium;

(b) adding a calcium salt precursor to the medium after the phosphite has been hydrolyzed to obtain a calcium phospate gel;

(c) depositing the calcium phosphate gel as a coating on the surface of a substrate; and

(d) calcining the calcium phosphate coating at a suitable elevated temperature and for pre-determined time to obtain a crystallized calcium phosphate having desired crystallinity, bonding and porosity characteristics.

17. A process as claimed in claim 16 wherein the deposition of the coating on the substrate is performed by aerosol deposition, dip-coating, spin-coating, electrophosphate coating or electrochemical coating.

18. A process as claimed in claim 16 wherein the calcium phosphate coating is calcined at a temperature of at least about 350°C.

19. A process as claimed in claim 16 wherein the calcium phosphate gel is hydroxyapatite gel.

20. A process as claimed in claim 16 wherein the thickness of the calcium phosphate coating on the substrate is between about 0.00001 mm and 0.01 mm.

21. A process as claimed in claim 16 wherein the thickness of the calcium phosphate coating is between about 0.0001 mm to about 0.001 mm.

22. A process as claimed in claim 16 wherein the tensile bond strength between the calcium phosphate coating and the substrate is greater than about 20 MPa.

23. A process as claimed in claim 16 wherein the calcium phosphate gel is deposited on the substrate as particles having a diameter between about 1μm and 100 μm.

24. A process as claimed in claim 16 wherein the porosity of the calcium phosphate coating is controlled and retains and eludes a drug.

25. A process as claimed in claim 24 wherein the rate of release of drug is controlled in a defined manner.

26. A process as claimed in claim 16 wherein the calcium phosphate coating is hydroxyapatite, dicalcium phosphate, tricalcium phosphate or tetracalcium phospate.

27. A process of coating a soft tissue implantable device with a calcium phosphate coating comprising:

(a) providing a soft tissue implantable substrate;

(b) depositing a calcium phosphate coating on the substrate utilizing a biomimetic deposition process; or

(c) depositing the calcium coating on the substrate utilizing a calcium phosphate cement deposition process; or

(d) depositing the calcium phosphate coating on the substrate utilizing an electro-phoretic deposition process; or

(e) depositing a calcium phosphate coating on the substrate utilizing an electrochemical deposition process.

28. A process as claimed in claim 27 wherein the substrate is a stent.

29. A process as claimed in claim 27 wherein the calcium phosphate coating is hydroxyapatite.

30. A process as claimed in claim 27 wherein the calcium phosphate coating is deposited discontinuously on the substrate as discrete particles.

31. A process as claimed in in claim 27 wherein a first calcium phosphate coating is deposited on the substrate utilizing an aerosol-gel process, a sol-gel process, an electro-phoretic deposition process or an electrochemical deposition process and a second calcium phosphate coating is deposited on the first coating or the substrate utilizing an aerosol-gel process, a sol-gel process, a biomimetic process, a calcium phosphate cement process, an electro-phoretic deposition process or an electrochemical deposition process.

32. A process as claimed in claim 27 wherein the calcium phosphate coating contains a drug.

33. A process as claimed in claim 27 wherein the calcium phosphate coating is coated with a hydrogel film.

34. A process as claimed in claim 27 wherein the calcium phosphate is deposited on the substrate as discontinuous non-equiaxial particles.

35. A process as claimed in claim 34 wherein the non-equiaxial particles have an average size of about 0.1 μm and a thickness of up to about 0.01 mm.

36. A process as claimed in claim 31 wherein both the first and the second coatings contain a drug.